

(No Model.)

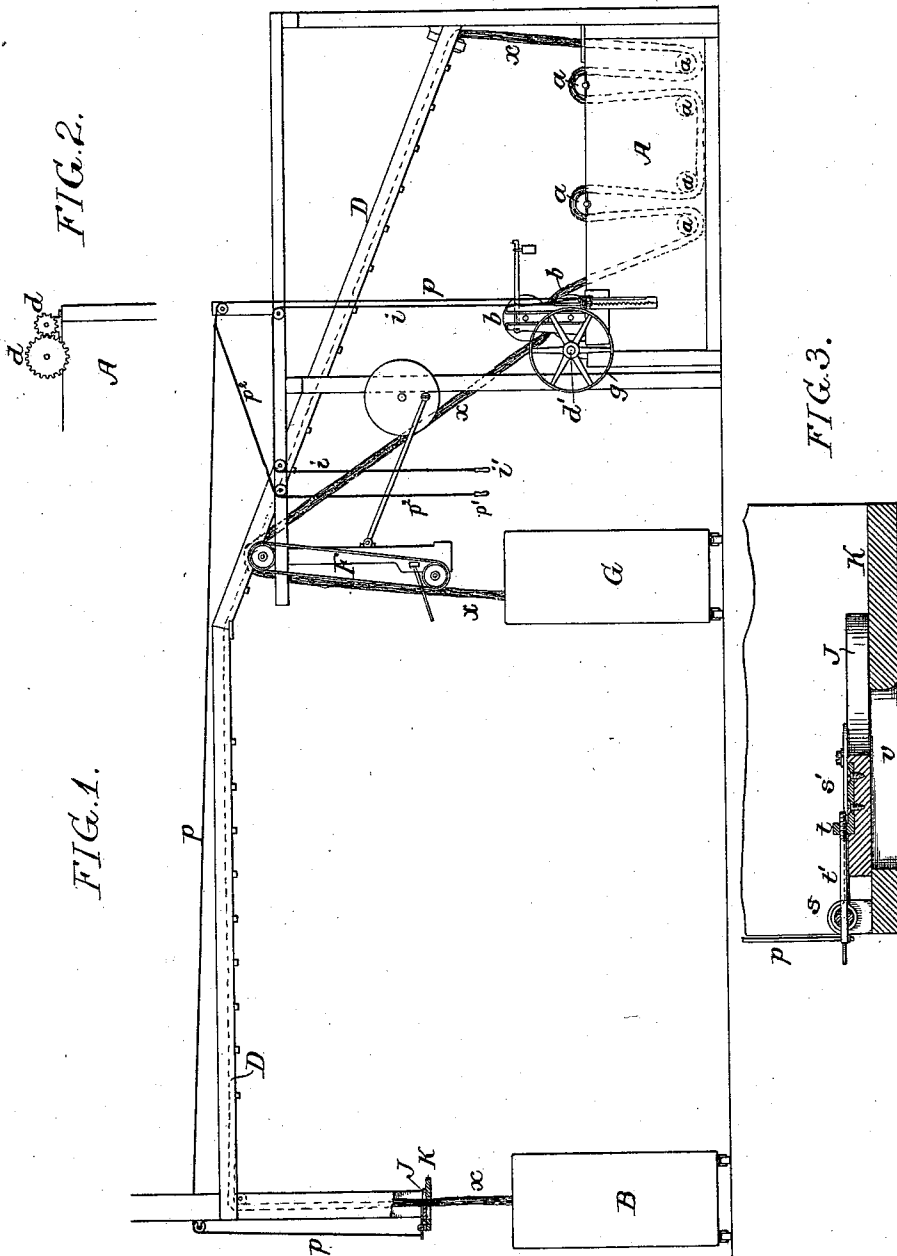
2 Sheets—Sheet 1.

J. BLAIR.

STOP MOTION FOR WARP SIZING AND LIKE MACHINES.

No. 466,596.

Patented Jan. 5, 1892.



Witnesses:

Hamilton D. Turner
Alex. Barkoff

Inventor:

John Blair
by his Attorneys
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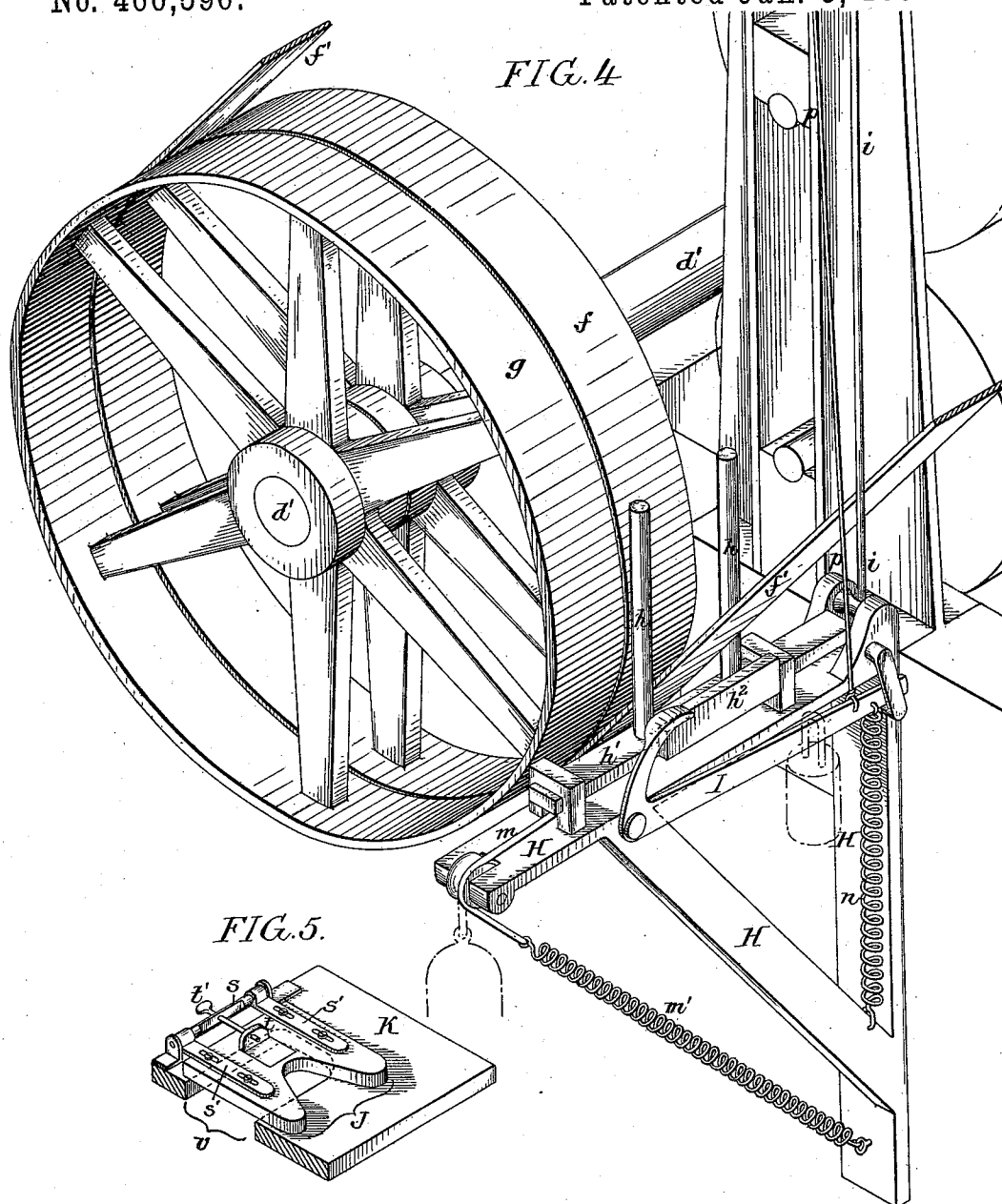
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UNITED STATES PATENT OFFICE.

JOHN BLAIR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO RICHARD GREENWOOD, WILLIAM BAULT, AND JOHN T. GREENWOOD, OF SAME PLACE.

STOP-MOTION FOR WARP-SIZING AND LIKE MACHINES.

SPECIFICATION forming part of Letters Patent No. 466,596, dated January 5, 1892.

Application filed May 18, 1891. Serial No. 393,100. (No model.)

To all whom it may concern:

Be it known that I, JOHN BLAIR, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Stop-Motions for Warp-Sizing and Like Machines, of which the following is a specification.

My invention consists of certain improvements in machinery for sizing, dyeing, drying, washing, or otherwise treating yarn in the form of warps—that is to say, where a large number of threads or strands in long lengths constituting a warp for application to a loom are laid together and in this form are subjected to the desired treatment.

The invention is also applicable to machines for treating piece goods or yarns or fabrics generally, which are drawn through the machine by rolls while in the form of a string, in which tangling, bunching, or knotting is likely to occur.

The object of my invention is to prevent any interference with the proper action of the machine, due to the passage into said machine of such knot, bunch, tangle, or other protuberance, and this object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of a warp-sizing machine, illustrating the application of my invention thereto. Fig. 2 is a side view illustrating a part of the gearing of said machine. Fig. 3 is an enlarged sectional view, and Figs. 4 and 5 are enlarged perspective views of those parts of the machine to which my invention particularly relates.

A brief general description of the sizing-machine will be advisable as a preliminary to the description of the parts constituting my invention.

A represents the sizing-tub, which has suitably-guided rollers *a* for directing the warp *x* into and through the sizing-liquid contained in the tub, the warp finally passing between a pair of squeezing-rolls *b b*, by which the surplus sizing is expressed from the warp, the lower squeezing-roll receiving motion by means of spur-gears *d d*, Fig. 2, from a driv-

ing-shaft *d'*. The warp *x* is drawn from a box or receptacle B, and passes thence up to and over an elevated guide trough or channel D, which delivers it at one end of the sizing-tub, the warp, after being delivered by the squeezing-rolls *b b*, passing to a vibrating laying-frame F, by which it is delivered into a box or receptacle G.

Such machines as at present constructed have to be very closely watched, for if the knot, bunch, tangle, or other protuberance upon the warp passes into the machine the squeezing-rollers will not deliver the same, so that the forward movement of the warp is arrested and the squeezing-rollers will in a short time so rub upon and abrade the threads of the warp as to cut through and destroy the latter. The same objection applies to machines for treating other yarns or piece goods which are likely to become tangled or knotted. Hence, although I have hereinafter alluded to a warp as the material treated, it should be understood that my invention and claims are intended to cover machines for treating such yarns or piece goods.

With the view of overcoming the objection above noted I provide the machine with stop mechanism under control of a detector-lever, the latter being so acted upon by any protuberance upon the warp or other material being treated as to effect the stoppage of the machine. As shown in Fig. 4, the driving-shaft *d'* of the machine has fast and loose pulleys *f* and *g*, the pulley *f*, when the machine is in operation, receiving the driving-belt *f'*, which runs to a pulley on any adjacent counter-shaft, this belt being under the control of pins *h* upon a shifter-slide *h'*, which is suitably guided in a bracket H on the side of the tub and can be moved in one direction by a pull-cord *i* and in the other direction by a cord *m* and spring *m'*, said cords *i* and *m* passing over suitable guide-pulleys and the cord *i* terminating in a handle *i'* within convenient reach of the attendant. The belt-shifting slide *h'* has at one side a notched flange *h²*, and with the notch in said flange engages a retainer-lever I, hung to the bracket H, this lever being held in engagement with

the notch by means of a spring n' , but being connected to one end of a cord p , which passes over suitable guide-pulleys on the frame of the machine, the other end of said cord being connected in any suitable manner to the detector-lever J, which in the present instance is pivoted to a frame K, located above the box B. Weights may replace the springs m' and n' , if desired, as shown, for instance, by dotted lines in Fig. 4. The pintle s of the detector-lever has in the present instance slotted arms s' for receiving the screws, whereby a forked plate constituting part of the long arm of the detector-lever is secured thereto, and said plate has a nut t for the reception of the threaded end of a set-screw t' , carried by the pintle s . The warp passes through an opening v in the frame K and through the forked front end of the detector-lever J. Hence by turning the set-screw t' the forked plate may be advanced or retracted, and the size of the opening for the passage of the warp may be increased or diminished to accord with the normal size of said warp. So long, therefore, as the warp retains this normal size it will pass freely through the opening; but any protuberances upon the warp, such as would be caused by the knotting or tangling of the same, will catch the forked plate of the detector-lever and lift the same, thereby pulling upon the cord p , tripping the retainer-lever I, and releasing the shifter-slide h' , which will be at once moved under the influence of the spring m' or of the weight, if the latter is used, so as to shift the belt from the fast to the loose pulley and stop the machine. The machine may also be stopped by hand by pulling upon the handle p' , connected to a cord p^2 , which depends from the cord p and is located adjacent to the handle i' of the cord i , whereby the machine is started.

Although I have described my invention as applied to a belt-shifter, it will be evident that it can be used with equal facility upon a machine having a clutch. Hence the term "belt-shifter" as used in the claims is intended to apply to a clutch-shifter as an equivalent construction.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of the feeding-rollers of a warp-sizing or like machine and driving

mechanism therefor with a belt-shifter, a retainer-lever therefor, having a short arm engaging with the shifter, a detector-lever having a long arm which serves as a guide for the warp, and a cord passing over pulleys and serving as a connection between the short arm of the detector-lever and the long arm of the retainer-lever, whereby the movement of said detector-lever is directly imparted to the retainer-lever and the release of the belt-shifter is effected, substantially as specified.

2. The combination of the feeding-rollers of a warp-sizing or like machine and driving mechanism therefor with a belt-shifter, a retainer-lever therefor, located parallel with the belt-shifter and having a short arm engaging with said shifter, a detector-lever having a long arm which serves as a guide for the warp, and a cord passing over pulleys and serving as a direct connection between the short arm of the detector-lever and the long arm of the retainer-lever, substantially as specified.

3. The combination of the feeding-rollers of a warp-sizing or like machine and driving mechanism therefor with a belt-shifter, a spring or weight for moving the same in one direction and a pulling-cord whereby it may be moved in the opposite direction, a retainer-lever for said belt-shifter, a detector-lever serving as a guide for the warp, and a connection between the said detector-lever and retainer-lever, substantially as specified.

4. The combination of the feeding-rollers of a warp-sizing or like machine and driving mechanism therefor with a belt-shifter, a retainer therefor, and a detector comprising a fixed frame bounding part of the opening for the passage of the warp and a pivoted lever bounding the other portion of said opening and connected to the retainer, that portion of said lever which aids in forming the opening for the warp being adjustable from and toward the pivotal axis of the lever, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN BLAIR.

Witnesses:

WM. H. SHALLCROSS,
JOHN T. McDONOUGH.